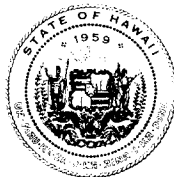


BENJAMIN J. CAYETANO  
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STATE OF HAWAII  
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ENVIRONMENTAL MANAGEMENT DIVISION  
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in reply, please refer to:  
EMD / SHW

September 19, 1995

**POLICY UPDATE**  
***Technical Guidance Manual***  
***for Underground Storage Tank Closure and Release Response***

**Determination of Groundwater Utility  
at Leaking Underground Storage Tank Sites**

TO ALL INTERESTED PARTIES:


The Hawai'i Department of Health's Solid and Hazardous Waste Branch, Underground Storage Tank Section, is issuing a policy update to its *Technical Guidance Manual for Underground Storage Tank Closure and Release Response* (August 1992). **This policy update is effective September 13, 1995.**

Recommended cleanup criteria at leaking underground storage tank (LUST) sites depend on, among other things, whether the ground water underlying the site is used or intended for use as a drinking water source. This policy directs owners and operators of USTs to use the aquifer system classification reports developed by the University of Hawai'i at Mānoa's Water Resources Research Center in determining the use of the ground water underlying the site.

This new policy allows for more efficient allocation of limited cleanup resources by ensuring that cleanup requirements applied to a site are appropriate for the use of the site and the surrounding area, while at the same time maintaining effective protection of human health and the environment.

Please bring this policy update to the attention of anyone you know who may have an interest in this matter. Should you have any questions regarding this policy update, please contact the Underground Storage Tank Section at (808) 586-4226.

Sincerely,

  
STEVEN Y.K. CHANG, P.E., MANAGER  
Solid and Hazardous Waste Branch

Attachment

## DETERMINATION OF GROUNDWATER UTILITY AT LEAKING UNDERGROUND STORAGE TANK SITES

### Background

Soil and groundwater cleanup criteria for remedial activities pursuant to 40 CFR Part 280 Subpart F (RCRA I) and Hawai'i Revised Statutes, Chapters 342L and 128D, are based in part on the utility of the groundwater impacted or potentially impacted by the release. Cleanup criteria for release that threaten sources of drinking water are based primarily on human health concerns. Cleanup criteria for releases that threaten non-drinking water sources are based primarily on ecological/aquatic-life concerns. In general, cleanup criteria for releases that threaten drinking water are much more stringent than for those that do not.

As a useful first approximation, and in order to help maintain consistency in groundwater protection policies within the Department of Health (DOH), the SHWB informally adopted the Underground Injection Control (UIC) line as an initial demarcation between aquifer systems that serve or could potentially serve as sources of drinking water (generally beneath the inland areas of the islands) and those that could not (generally beneath the coastal areas of the islands). The UIC line was established by the DOH Safe Drinking Water Branch (working in cooperation with the Honolulu City & County Board of Water Supply, the U.S. Geological Survey, and the Water Resources Research Center of the University of Hawai'i - Mānoa, among others) for purposes of regulating the location of underground injection wells. Reference to the use of the UIC line for SHWB purposes is made in the document "Technical Guidance Manual for Underground Storage Tank (UST) Closure and Release Response (TGM, August, 1992)," prepared by the UST Section of the SHWB.

In accordance with UIC guidelines, aquifer systems mauka (inland) of the UIC line are by default considered to be current or potential sources of drinking water. Aquifer systems makai (oceanward) of the UIC line are considered by default to not be current or potential sources of drinking water. Correspondingly, cleanup criteria for release sites located mauka of the UIC line are initially set to be protective to drinking water standards. Cleanup criteria for release sites located makai of the UIC line are initially set to be protective to generally less stringent non-drinking water (surface water) standards.

## **Statement of Problem**

The UST section of the SHWB deals with hundreds of facilities with leaking underground storage tank (LUST) sites that are required by federal and state law to report UST-related releases to DOH. Most, if not all, LUST sites are too small to technically or economically warrant a full-scale investigation of the utility of the groundwater that has been or could potentially be impacted by the release. This necessitates the use of approximated, regional groundwater-utility "zones", defined by use of such tools as the UIC line.

Numerous LUST facilities located mauka of the UIC line, however, have requested variance from use of the UIC line to approximate groundwater utility beneath their sites. The requests have been based on the known geology of the site and a position that the release does not threaten an aquifer system that currently or could potentially serve as a source of drinking water. Indeed, many of the subject sites overlie clay-rich, "caprock" coastal plain sediments that are not suitable as sources of drinking water. An extensive, subsurface investigation of the local groundwater system would likely support this at many of the sites if such an investigation was technically and economically feasible. Fortunately, recent research on aquifer systems throughout the islands addresses the bulk of these problem areas.

## **Aquifer Identification and Classification Technical Report Series**

Since establishment of the UIC line, DOH has sponsored additional research regarding the identification, classification, and protection of groundwater resources in Hawai'i. The most important outcome of this research to date has been the "Aquifer Identification and Classification" technical report series published for each island by the Water Resources Research Center (WRRC) at the University of Hawai'i - Mānoa (see references). The reports have been incorporated into the draft Water Resources Protection Plan (March, 1992), prepared by the Department of Land and Natural Resources as part of the Hawai'i Water Plan under provisions set in Chapter 174C of the Hawai'i Revised Statutes. The DOH Office of Hazard Evaluation and Emergency Response currently uses the WRRC aquifer identification and classification reports to screen sites for prioritization.

The WRRC reports systematically review aquifer systems throughout each island and, as one element, indicate whether the aquifer system as a whole can or cannot be utilized as a source of drinking water (aquifer system "utility," second digit in aquifer system status code). Because division of the aquifer systems is based largely on geology, the WRRC aquifer classification system reports address many of the problem areas brought about by reliance on only the UIC line to approximate groundwater utility.

One of the shortcomings of the aquifer system classification reports, recognized by the authors (Mink, personal communication - Attachment A), is a lack of sufficient data to subdivide geologically-defined aquifer "types" into more narrowly-defined "units" based on the variability of groundwater quality within the aquifer system. This can be especially important in coastal areas where groundwater quality within an otherwise "drinking water" aquifer system degrades to below drinking water standards as the freshwater lens pinches out and mixes with saline water within the same geological formation. Examples include much of the basaltic coastal areas of the islands of Kaua'i, Maui, Moloka'i, and Hawai'i.

In these areas, the groundwater specialists consulted generally agreed that the UIC line can serve as a useful and valid tool for approximating the inland boundary of coastal-zone, aquifer system "units" that are not current or potential sources of drinking water (see Attachment A). Over time, continued investigation of Hawai'i's groundwater resources will naturally lead to a refinement of the boundaries between regional aquifer systems and a better breakdown of distinctive units within individual systems.

#### **Policy Statement**

Facilities with releases from USTs regulated by the UST Section of the DOH Solid and Hazardous Waste Branch must determine the utility of groundwater (generally drinking water or non-drinking water) that has been or may potentially be impacted by the release. In support of the determination of groundwater utility, the following information should be submitted to the DOH:

1. a review of the known surface and subsurface geology and hydrogeology of the site, including information gained during investigation of the release and information provided in published or unpublished reports that include the subject area (refer to TGM, August 1992 edition for information required in site investigations)
2. a description of all aquifer systems (classification, status, etc.) that have been impacted and/or could potentially be impacted by the release in accordance with the referenced aquifer system classification reports published by the WRRC, and
3. a map showing the location of the release site with respect to the boundaries of impacted or potentially impacted aquifer systems.

In addition, if the UIC line is used to approximate the inland boundaries of coastal-zone, non-drinking water aquifer system units, then the location of the UIC line with respect to the corresponding aquifer system(s) should be included on the map and discussed in the text of the report.

DOH may request additional site-specific geologic, hydrogeologic, and other pertinent information as necessary on a site-by-site basis to make final groundwater utility determinations. In particular, facilities situated near aquifer system boundaries should evaluate the geological accuracy and applicability of the aquifer system maps to their site.

DOH reserves the right to make final decisions of groundwater utility on a site-specific basis, regardless of the location of the site with respect to regional characterizations of aquifer systems. This may become especially important in areas of extensive soil and groundwater contamination, at sites located near important aquifer system boundaries where detailed subsurface data is not available, or in ecologically sensitive areas (e.g., near bodies of surface water).

The review of an aquifer systems status as a source or potential source of drinking water will be for UST section purposes only and the results of the review should not be construed as an official confirmation or refinement of the UIC line in the area of the release site. Injection well applications, if any, will be processed according to UIC regulations, Chapter 23, by the UIC program of the Safe Drinking Water Branch (SDWB) and such applications will not be excluded from UIC restrictions due to designations of what is or is not a source of drinking water that have not been approved by the SDWB.

APPROVED/~~DISAPPROVED~~



Bruce Anderson, Ph.D., Deputy Director, Environmental Health,  
Department of Health

7/13/95  
Date

## References:

Environmental Response Law, Hawai'i Revised Statutes, Chapter 128D.

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State Water Code, Hawai'i Revised Statutes, Chapter 174C.

Technical Guidance Manual for Underground Storage Tank Closure and Release Response (August, 1992): Hawai'i Department of Health, Solid and Hazardous Waste Branch.

Underground Injection Control, Hawai'i Administrative Rules, Title 11, Chapter 23.

Underground Storage Tanks, Hawai'i Revised Statutes, Chapter 342L.